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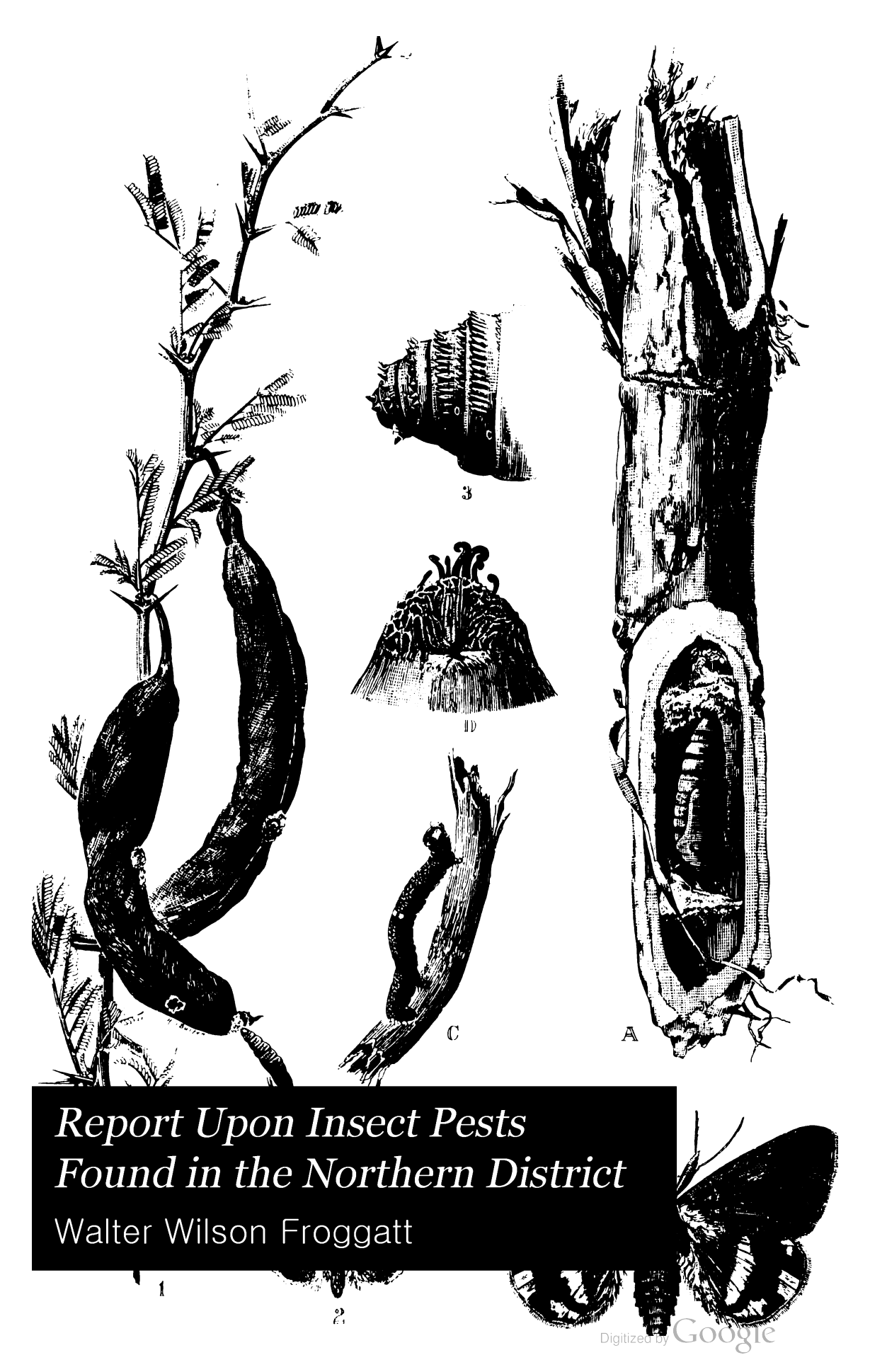

Report Upon Insect Pests Found in the Northern District

Walter Wilson Froggatt

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DEPARTMENT OF AGRICULTURE,

SYDNEY, NEW SOUTH WALES.

Miscellaneous Publication, No. 188.

Report upon Insect Pests found in the Northern District.

MAY, 1897.

BY

WALTER W. FROGGATT,

GOVERNMENT ENTOMOLOGIST.

SYDNEY: WILLIAM APPLEGATE GULLICK, GOVERNMENT PRINTER.

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FROM AGRICULTURAL GAZETTE OF N. S. WALES.

October, 1897.

Report upon Insect Pests found in the Northern District.

MAY, 1897.

BY WALTER W. FROGGATT,
Government Entomologist.

THE following notes are compiled from observations upon insects met with in the Tweed and Richmond River Districts during my late visit there. Going *via* Brisbane, my first collecting was done in the vicinity of Southport, Queensland, while waiting for the coach to the Tweed River Heads. The country round this watering-place consists of poor sandy soil covered with a low scrub of banksias, melaleuca, leptospermum, eucalypts, and other small shrubs, or open ti-tree swampy land.

This country was found to be rich in scale insects, and I obtained specimens of the large gall-making coccid, *Brachyscelis pileata*, Sch., not recorded from so far north before, and *Sphærococcus melaleuca*, Mask., as well as a very curious species (evidently new, belonging to this genus), that covered the melaleuca with small reddish rounded balls consisting of a number of bracts radiating from a common centre. This last gall was found from here to Palmer's Island on the Clarence River. Two scale insects, *Lecanium bacctatum*, Mask., and *Prosophora acaciæ*, Mask, were found upon the wattles, and *Aspidiotus Rossi*, Mask., and *Aspidiotus camelliæ* upon eucalypts. Two species of white ants (*Termitidæ*) were obtained, the nests of the large one (*Termes lactis*, Frogg) having been noticed along the line from Brisbane; the other *Eutermes fumipennes*, Walk., being common under bark and logs. The Tweed River with its sub-tropical wealth of plant life, though my stay was necessarily short, was found to be rich in insects even in the winter, many of the indigenous species having invaded the cleared land and attacked cultivated plants and crops.

The Chrysomalid beetles are naturally most numerous, the members of the group of "flea beetles" (*Haltericides*) were much in evidence. They take their popular name from having the thighs of the hind legs swollen out into a rounded lump, upon which they can spring to a considerable distance when disturbed. They feed upon the upper surface of the thick leaves, but they gnaw into holes those of finer texture. They are generally of small size, of dark metallic blue or bronze green colour. Several species were found upon sweet potatoes, cow peas, and other cultivated plants.

Wherever the wild bramble (*Rubus* sp.) was found growing numbers of the curious double-tailed larvæ of the Bramble saw fly (*Philomastix glaber*, Frogg.) were found feeding, together with the fully-developed saw-flies, which cling to the plant, and never attempt to fly away; the males of

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this species are very rare. The handsome chrysomalid beetle (*Spilopyra sumptuosa*, Baly.) was taken in numbers upon a small shrub in the forest country.

At Mr. Lily's I examined a potato-field, in which he had found the plants dying off in a most unaccountable manner, but close examination showed that it was caused by a small moth grub feeding in the stem. Some grubs were obtained, but died in the pupal state.

At Mr. G. Pettigrew's request, I examined the foliage of his late maize attacked by the so-called "maize blight," but cannot agree with the conclusions that he arrives at, that it is caused by the attacks of small Homopterous insects, commonly known as "froghoppers," for though there were great numbers of at least half a dozen species, they were more among the weeds than on the maize. Though the leaves were discoloured from the tips, the area of discolouration was too large and regular to be caused by their punctures, and showed no centre of infection, as would have been the case if pierced by their rostrum.

I believe that the "maize blight" is not caused by insects, but more likely from the want of some chemical constituent in the soil.*

The most destructive pest, as far as maize is concerned, is the "American boll worm, or maize moth" (*Heliothis armiger*), for it attacks both maize and cotton, as well as many other plants, both in the United States and these colonies. In several fields visited, nearly 75 per cent of the cobs were attacked, the grubs invariably crawling into the tassel or silk of the maize and gnawing downward into the tip of the cob, feeding on the corn until ready to pupate when they crawl down and bury themselves in the soil, but leave behind them a rotten mass, which when it becomes wet, destroys half of the corn. Yet none of the maize-growers seem to bother to get rid of these grubs, though when first attacking the tassel they could be easily hand-picked. There is no doubt the insectivorous birds greatly mitigated the evil in old times, but the indiscriminate slaughter of such feathered friends, as the magpie lark, the different robins, thick-heads, magpies, summer birds, and many others, has ended with the natural result that noxious insects have increased since the check has been removed. It is to be greatly regretted that more stringent regulations are not enforced for the protection of our useful birds. If the farmers only recognised the true value of the birds, they would protect them as carefully as their poultry. Most of our insectivorous birds are of such a friendly disposition as to be easily destroyed by the pot-hunter, and this last season, in the Liverpool district, I saw both magpie larks and flycatchers shot for sport. In the propagating-grounds of the Botanic Gardens there is a small mob of the former which are so tame that they will hardly fly out of one's way, and this most graceful bird is one of our best insect-hunters.

The slender green caterpillars of "the silver spotted plusia" (*P. verticellata*) were taken upon the cow-peas, while the larva of one of the larger hawk moths had evidently been feeding upon the foliage of the sweet potatoes. A few of the old orange trees were more or less attacked by "borers"; but there are comparatively few fruit trees now grown about the settlers' homes, though at one time I am told there were some very good orchards on the Tweed River.

* For information in regard to the supposed cause of "maize blight," see "maize disease" in Mr. H. Tryon's Report on Insects and Fungus Pests, Queensland, 1889, pp. 199 and 209. Here a number of reports are collected and printed together with Mr Tryon's own observations upon the matter.

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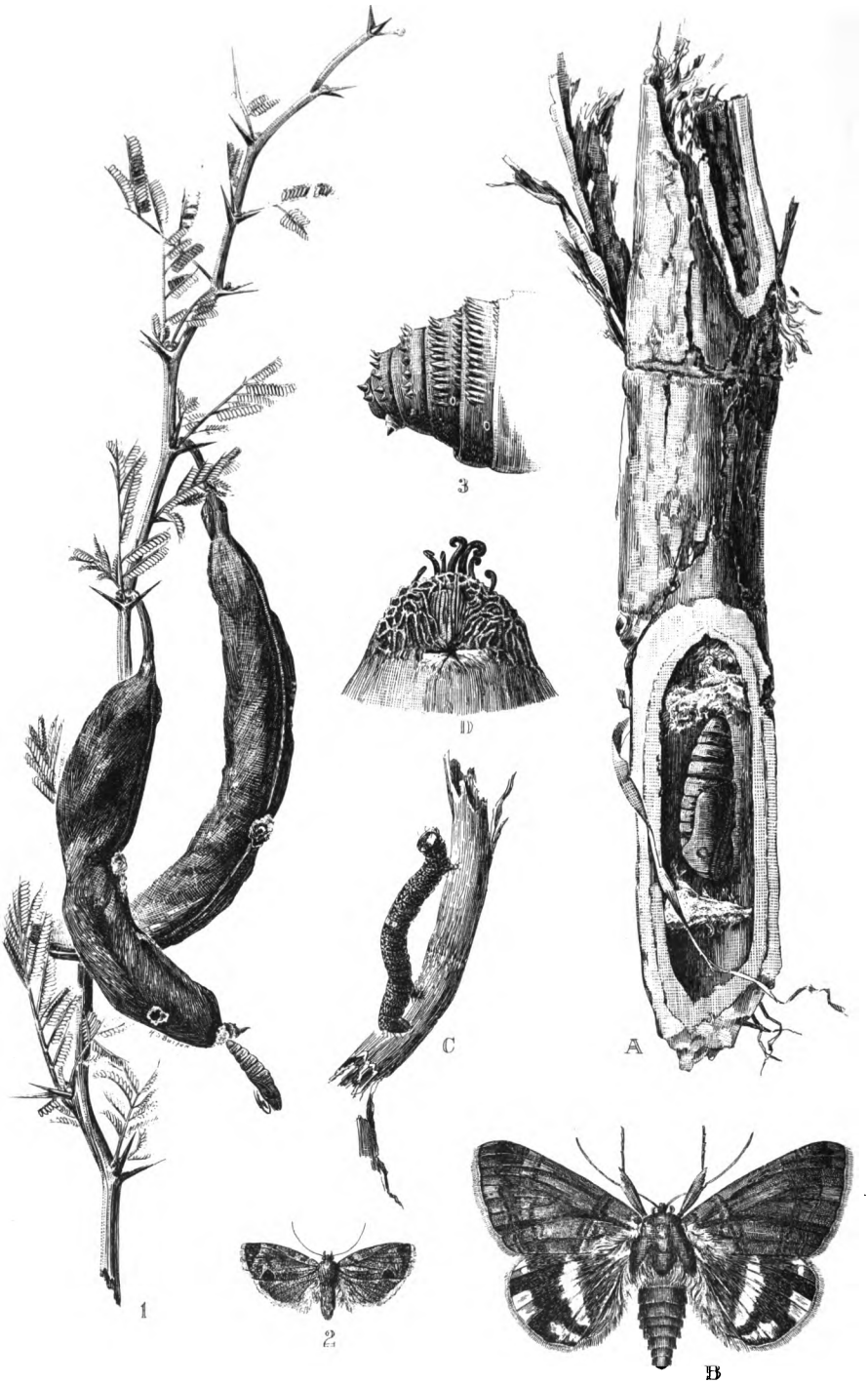

The Acacia-pod Moth.

(Arotrophora ombrodelta, Lower.)

1. The Pods affected.
2. The Moth.
3. End Segments of the Larval Tube.

The Castor-oil Tree Moth.

(Achaea melicerte, Drury.)

A. Stem showing Pupa.
B. The Moth.
C. Larva.
D. Anal Segment showing hooks.

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At the Wollongbar Experiment Farm, I was struck with the absence of scale insects among the many different kinds of plants and trees. One tree near the house, which had been completely denuded of its foliage by the larvæ of one of our native silkworm moths, had the limbs and twigs so thickly covered with the "Indian wax scale," *Ceroplastes ceriferus*, as to look as if it had been painted; but this had been kept as a sample for me. A patch of red clover was thickly covered with *Icerya nudata*, Mask., which crawled about, and clung to the leaves, though the plants did not seem to be much affected by their presence.

Monolepta rosae (one of the Chrysomalid beetles), which the manager (Mr. McKeown) tells me is very plentiful at some seasons on the farm, were noticed covering one orange tree, and destroying all the young foliage. The late Mr. A. S. Olliff has given a description and some account of the habits of this beetle; but the early stages of its development are still unknown. The pumpkin beetle (*Aulacophora oliverei*) were pretty numerous in many parts of the farm; but Mr. McKeown says he can keep both these leaf-eating beetles in check by spraying with Paris green.

The cotton plants seem to be greatly favoured by the members of the order *Hempteria*, several large bugs being always found upon them, the harlequin fruit-bug (*Dindymus vericolor*) being one of the commonest. A short olive-green caterpillar covered with dark spots, also gnaws into the bolls, to feast upon the seeds. This is allied to, if not identical with, the peach moth (*Conogethes punctiferalis*), which is very plentiful among the castor-oil plants, the caterpillars gnawing their way into the hollow stems and eating out the pith, where they afterwards pupate.*

Another moth (*Achaea melicerte*, Drury) also attacks the castor-oil trees, the larvæ feeding upon the foliage, a detailed description of which is given below. Some bushes of fennel seemed to be very attractive to many different insects flying about the flowers, such as ichneumon wasps and flies, while upon the stem were found a small weevil (*Lixius marstersi*) and the shining longicorn (*Temnosternus planusculus*, Macl.)

The seeds of *Acacia farnesiana* were very badly infested by the larvæ of a handsome little moth (*Arotrophora ombrodelta*), hardly any pod being sound. The life history of the moth is appended.

The fruit fly (*Tephritis Tyroni*, Frogg.), which was not noticed on the Tweed, was found at Wollongbar hovering round every orange tree that still bore fruit, and all the fruit examined contained their maggots. A large number of larvæ collected in the forest and scrub under logs and stones, or cut out of logs, were brought down to Sydney, and are now being kept to work out their life histories.

The great number of the larvæ of the peach moth (*Conogethes punctiferalis*, Gn.) were noticed feeding upon the dead flower-buds, and afterwards upon the pith of the dead stalks of the castor-oil plants, while a very similar larvæ was found feeding upon the cotton seeds in the ripening bolls.

The Castor-oil Tree Moth (*Achaea melicerte*, Drury).

These caterpillars are common upon the foliage of the castor-oil trees, stripping off the foliage, and, when ready to pupate, crawling into the hollows in the dead branches.

* This has been bred out in numbers since these notes were written, and proves to be the moth named.

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The caterpillar measures about 1½ in. in length, and is of a general reddish chestnut brown, the centre and the lower half along the sides of the segments blackish brown, with the chestnut colouration forming a stripe on either side; the head mottled with creamy white spots, forming a big blotch on either side; the front of the second thoracic segment marked with smaller spots; legs, reddish yellow, with the claws black, the claspers blotched with white. The caterpillars vary considerably in colour, some being very much darker than others.

The pupa measures an inch in length, and is dark-brown, but covered with a white floury substance that rubs off very readily; the head broadly-rounded, with the tip of the wing-cases reaching to the fourth abdominal segment; the anal segment curiously striated, terminating in two slender curved wire-like hooks, with six smaller curled ones round them, three on either side. The caterpillars were plentiful upon the trees on the 17th May, and they pupated about the end of the month.

When ready to transform, they crawl down into the hollow stem of a dead branch, forming a silken web on either side, and attaching themselves by the anal hooks to the upper partition, hanging head downwards. In captivity some pupated on the floor of the breeding-cage, but others formed the dead leaves into a rough cocoon. The first moth emerged at the end of May, and the last towards the end of June.

The moth measures 2¼ inches across the wings; the fore-wings of a light-brown, clouded with a bronzy chocolate colour towards the tips, marbled with irregular wavy transverse markings, with a more distinct band about a third from the shoulder; the hind wings are grey at the base, with a broad transverse white stripe between it and the apical portion, which is rich blackish brown, with three irregular white blotches along the outer margin.

Mr. Lyell, of Victoria, informs me that the larvæ of this moth feed upon the foliage of the rose as well as the castor-oil plant.

This moth has a wide range. In the British Museum Catalogue it is recorded from India, Ceylon, Celebes, and Moreton Bay, Queensland. Balfour, in his work on the "Agricultural Pests of India," speaking of this moth, says: "The larva is called Thondala hoola by the Canarese. They feed upon the castor-oil plants, the leaves and flowers of which they eat; on two or three acres of land, in one night, they will leave nothing but bare branches. The plants seldom survive their attack, and at best yield only one-fourth of the produce. The cultivators drive them from the plants by smoking, but this is impossible of application when seeds are sown on an extensive area, in which case the husbandman gives up all hopes of the crop."

The Acacia-pod Moth (*Arotrophora ombrodelta*, Lower).

In examining some ornamental acacias (*Acacia farnesiana*) growing upon the farm, every pod was found to be more or less infested with a small lepidopterous grub, which I afterwards bred out. Upon submitting specimens to my friend, Mr. Oswald Lower, of Adelaide, South Australia, he informs me that it is a new species, which he has described under the above name.

Mr. Meyrack says of one species of this genus: "The larva feeds in a short stiff silken tube amongst the leaves of *Lomantia silarfolia*, discolouring them conspicuously; pupa in a fine silken cocoon, covered with refuse within the end of the tube." And of another species: "Larva feeds in flower cones of *Banksia serrata*, burrowing through the substance of the cone whilst the seeds are forming." I am indebted to Mr. Lyell for these references.

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The caterpillar is of a uniform dull yellowish brown, but sometimes with a greenish tint; a pink stripe down the centre of the back, and each segment spotted with olive-green marks.

Length when full grown, 8 lines. They bore into the side of the pod and feed upon the seed, and when full grown spin a silken cocoon with the head pointing towards the hole in the pod through which the moth afterwards emerges.

The pupa is bright reddish brown, under half an inch in length; the head portion small and rounded, with the antennæ not folding close to the legs, but curving round on either side over the wings, the tip of the wing extending to the fourth abdominal segment; the thoracic portion rounded above with a median suture; the abdominal segments deeply marked on the upper edge with dark brown; each segment, except the first two, armed with two transverse bands of fine short spines curving downwards, but not extending round the underside. When the moth emerges the pupal case is worked through the hole in the pod so that two thirds of it is protruded before the moth escapes.

The moth measures from 11 to 9 lines across the wings; the fore pair of a chocolate-brown colour, mottled, and darkest at the tips. The hind margin, from the shoulder to about two-thirds of the length of wing, marked with an elongated oval stripe, while just beyond it is an angular rich chestnut coloured spot (looking almost black until examined with a lens). The hind wings brown, both pair thickly fringed with scales, and the head and thorax thickly covered with dark brown scales; abdomen lighter coloured.

The pupæ are plentiful in the seeds about May, and were pupating towards the end of June, the first moths emerging in August, but a great number still in the cocoons.

To get rid of these destructive seed-eaters all the pods should be gathered as soon as ripe and put into a jar where they could be treated with bisulphide of carbon.

[One plate.]

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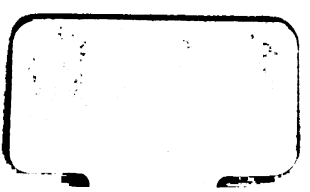

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